Light and Lighting

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Lighting Maintenance

FROM time to time the mundane matter of cleaning needs to be called to our attention in relation to lighting. It is, unfortunately, true that the utilisation of light is often allowed to fall quite seriously through neglect to clean luminaires—by which we mean, of course, lamps together with their associated fittings—and through infrequent window cleaning. But there are other aspects of lighting maintenance that must be kept in mind. An obvious, although again a neglected one, is the replacement of lamps that after long service are no longer efficient. There should, of course, be due consideration for ease of maintenance—cleaning and re-lamping—at the design stage both of fittings and installations. A fitting which is "a real box of tricks," requiring considerable dissembly for proper cleaning, is likely to be left "well alone" too long; and if the installation designer does not take due account of accessibility when planning the location of luminaires, some of these sources of light may remain extinguished too long because of the difficulty of replacing defunct lamps. Inadequate lighting maintenance is doubly wasteful—it wastes money for light absorbed and it wastes human effort in seeing.

Notes and News

I.E.S. Summer Meeting

A full report of the fourth I.E.S. Summer Meeting will appear in our next issue. In the meantime there are certain points about the meeting which might be recorded whilst they are still fresh in our memory.

One of the outstanding points was without doubt the record attendance, 50 per cent. more than at any previous meeting. There was also a larger number of overseas visitors, who came from France, Belgium, Holland, Denmark, Norway, Finland, the United States, Eire, New Zealand and India. It must be a source of satisfaction to the Society that the meeting attracts people from so far afield.

One might ask why this meeting should have been so much better attended than previous meetings. There are probably a number of reasons. The success of earlier meetings must have some effect on attendance at successive meetings, but part of the larger numbers at Southport must have been due to the practical nature of the papers presented and to the inclusion in the programme of the display of new lighting equipment and a number of visits to factories and schools. There is no doubt that the programme was a very full one, but everyone seemed to be quite happy that this should be so even though it meant that they were near to exhaustion by the end of the meeting.

The technical papers went over very well. Dr. Aldington can always be relied upon to put on a good show—so good, in fact, that one cannot help but feel sorry for authors who have to follow him. Nevertheless, the other authors held the attention of their audiences throughout the presentation and discussion of their papers. (Incidentally, I.E.S. audiences must be amongst the most attentive—there is an absence of the usual coughing, shuffling of feet and general coming and going which seem to feature so largely in many conferences.) This time the programme included a paper (as opposed to an address) from a distinguished overseas visitor. The only fault with this paper was that Andre Claude was not allowed to speak in French; he made his points extremely well in English, but it was obvious that in his native tongue he could have got really warmed up on the decorative element in lighting, on which he so obviously is an expert.

One of the problems in arranging the time-table of a summer meeting is how much time to allow for the presentation of a paper and how much for its discussion. It would seem that the amount of time required for each would be based on experience, but it seems that at each meeting more and more time is required for the discussions. And, of course, as the number of delegates increases so there are more people who want to join in. Anyway, it is a very healthy sign when discussions have to be curtailed rather than drawn out.

The inclusion of visits to factories and schools in place of the usual social type of visit was a good idea. But one wonders why so many people take places on these visits and then don't turn up. The number that can take part is sometimes limited by the number that the hosts can accommodate. Invariably with such visits there are more people wishing to take part than can be accepted; so when people fail to turn up at the appointed time and place they are depriving others of the ability to take part. It is also somewhat discourteous to the hosts, who may have gone to great trouble to arrange a visit for, say, 50 people, only to find that a mere 20 or 30 turn up. (The I.E.S. secretariat also have just grounds for feeling a little hurt under such circumstances, particularly if they have (as indeed they did in the case of at least two of the visits at Southport) to explain to would-be participants that all places have been taken—and it's surprising the number of people who say: " But surely you can squeeze me in.")

One of the most successful visits at Southport was that to the schools; actually there were two visits, run concurrently, one to a technical school in Wigan (a much maligned town) and the other to a secondary modern school in Preston. These visits were included to give lighting engineers a chance to see something of the work of architects. One might have thought that with all lighting engineers have to say about the lack of co-operation of architects they would have been keen to show their interest in the architects' work. Out of the 450 at the meeting some 80 opted to go to the schools, and of this number about 50 actually turned up. Those who did take part certainly learned a lot, and we hope that those who didn't take part are now sorry.

The display of new lighting equipment, included in the summer meeting programme for the first time, attracted a large crowd on the Wednesday evening. The idea of grouping the various items under

applications and having each group introduced by an independent speaker worked very well. This is obviously a thing which can form part of all future summer meetings. As this was the first such display since the end of the war it must have been a little difficult to know what to define as new; future summer meeting committees will now have a starting line. Such a display can be a very valuable feature as it is something which is of great interest to users and may, provided that the remainder of the programme also offers them some attraction, induce them to attend summer meetings in greater numbers than at present.

The main social event was of course the annual dinner and dance, which was well attended—and, if the noise in the Palace Hotel at 2 a.m. is anything to go by, most enjoyable. The speeches after the dinner included some of the shortest and best ever; let us hope that this is a sign that the I.E.S. is making a determined effort to avoid the long and dreary after-dinner speeches from which those who attend dinners for enjoyment so often have to suffer.

To conclude, the summer meeting might be summed up by quoting what several delegates from home and overseas had to say—" We have learned a lot and will come again."

Street Lighting and Road Accidents

Of interest to municipal lighting engineers, local authorities, and all concerned with street lighting, is a 24-page brochure recently issued by the British Electrical Development Association entitled " A Matter of Light or Death," which draws attention to the increased accident rate after dark as revealed by analysis of official statistics, and points out the need for better street lighting.

It is stated that an important feature of modern electric street lighting equipment is its economy in operation. This arises from the very high efficiency of fluorescent and other discharge lamps and also from the considerable savings in maintenance costs possible with modern lanterns. For these reasons it is claimed that improved street lighting need not impose a heavy additional burden on the rates whilst much existing street lighting represents a poor return for money spent since it does not fulfil the purpose for which it was intended.

Fluorescent lamps and mercury and sodium discharge lamps, says B.E.D.A., are rapidly superseding tungsten filament lamps because they use much less electricity and require replacing less often. There is, however, no simple method of deciding which form of lighting is best for any set of circumstances; the only safe way is to consider each type on its merits. The cost of any type of street lighting can only be estimated with any certainty when local conditions and prices are known. Fluorescent lighting is often thought to be expensive and beyond the means of small lighting authorities but this is by no means true, and no lighting authority contemplating new street lighting should fail to give careful consideration to it on grounds of economy as well as effectiveness.

The brochure contains a number of graphs of accident statistics which show, says B.E.D.A., that most existing street lighting is not good enough for safety at night; the radical overhaul of existing street lighting is the first essential for road safety after dark.

The brochure contains an outline of the relative features and costs of fluorescent, mercury and sodium lamps when used for street lighting, and includes a number of illustrations of typical modern street-lighting installations.

Colour Television

At their last meeting of the session the Physical Society Colour Group discussed two papers read by members of the research staff of the B.B.C.

The first paper, by Mr. W. N. Sproson, dealt with the subject of subjective white in colour television and described experiments made with a " jury " of 12 colour-normal observers to find out the colour which they would select for themselves as a subjective white. Different adaptation conditions of interest in actual viewing were taken; when the observers were adapted to tungsten lighting, the white chosen was in the neighbourhood of 3,500 deg. K, for daylight adaptation it was about 4,600 deg. K, while with no adaptation the choice was at 4,200 deg. K. The luminance of the field was 10 ft.-lamberts. It was interesting to notice, said Mr. Sproson, that with a free choice all the observers selected a colour somewhat on the green side of the black-body locus.

The second paper was by Dr. M. Gilbert who described work on observers' colour preferences in television pictures, with particular reference to colour saturation. In the experiments, coloured pictures were transmitted over a closed circuit colour television system of the frame sequential type. A number of people viewed the transmitted picture both in monochrome and in colour and set a colour-saturation/contrast control to their own preference of picture quality for each. On another occasion the same viewers were asked to adjust the amount of red and green signal in the transmitted colour picture until they obtained what they considered to be optimum colour quality. The viewers were never allowed to see the originals of the pictures which were being transmitted. The experiments gave the rather surprising result that most viewers, watching a televised colour scene in a semi-darkened room, preferred that the reproduction should be somewhat desaturated relative to the original picture.

A large store in Melbourne during the Royal Tour.

Light in Shops

The most effective use of light in shops is something which the discerning customer expects and the wise shopkeeper insists upon. The wise shopkeeper knows the drawing-power as well as the selling-power of light and vies with his competitors in using light to attract prospective customers to his particular emporium in preference to that of other vendors of similar goods. It is not enough, however, to be aware that light can be used to attract what, in the first place, are window-shoppers; to enhance the appearance of the goods displayed and not merely to reveal them; to foster the desire to purchase what is shown for sale, and to minister to the convenience of customers while in the shop and in the process of selecting their purchases: it is not enough to know that light can do these things without also having, or getting the help of someone who has the "know-how." The most satisfactory dispensing of light in shops is undoubtedly an art, but it is one to the practice of which must be brought not only "flair" or intuition but scientific and technical knowledge.

The shop window is a stage, and the "set" it contains should be lighted with the same care for "effect" that the competent and exacting producer demands in the theatre and the cinema studio. However artistic, clever and functional may be the display arranged by the expert window-dresser its sales value may be low if the display is not suitably dressed with light. This dressing with light often entails selective distribution so as to give salience to a particular object or group of objects which is to command attention. It involves the provision of such amounts of light as will reveal to the looker everything the vendor wishes him to see, and yet concealing from the looker all the sources of light by which he could be dazzled or made uncomfortable while window-gazing. More than this—but still without dazzling—enough light may be required to draw the gaze and make lookers of those who otherwise would be merely passers-by. Yet another important consideration is the colour of the light to be used.

All these considerations are relevant also to the use of light throughout the sales areas of shops. Light properly dispensed will enable purchases to be made expeditiously and confidently—it will not deceive the eye of the customer. There are other considerations as well concerning light in shops. It has to give adequate service to the sales staffs if they, in turn, are to give efficient service to the customer; it has to facilitate safe movement of the shopping public and good general supervision; and it has often to give "atmosphere" or character to the shop interior. There was never a time when light in shops could be provided so effectively as is now the case.

Boots Shop at Plymouth

Fig. 1. Exterior view

The reconstructed Plymouth shop of Boots Pure Drug Co., Ltd., on the corner of New George-street and Old Town-street is approximately 100 ft. long, 95 ft. wide, and 55 ft. high and includes a basement and four floors.

The main ground floor sales area has a suspended fibrous plaster ceiling which is finished a dark blue colour and into which most of the luminaires are recessed. The illumination level is higher than is generally found in shops and at service floor-case level 30 lm./ft.^{2} is provided by 30 2-ft. 6-in. diameter amber-tinted glass bowl ceiling units each of which is fitted with four 150-watt lamps. Over the counters themselves an illumination of 75 lm./ft.^{2} is provided by 79 silvered reflectors each of which is fitted with a 150-watt lamp. These reflectors are spaced on 3-ft. centres and each is fitted with a white enamelled louvre recessed flush with the suspended ceiling. Behind the counters a level of 25 lm./ft.^{2} of evenly diffused lighting is provided by three rows (two warm white and one gold) of 20mm. cold cathode tubing mounted in continuous wooden troughs above a continuous run of 3-ft. wide louvres. Altogether 500 ft. of tubing is used.

Lighting inside the wall display cases is provided by vertical and high level horizontal fluorescent lamps concealed by screens at the front of the cases. In some small irregular cases strip-lights are used. The lighting in the floor display cases is by means of concealed fluorescent lamps.

Lighting of the window enclosures is by a combination of tungsten lamps in prismatic glass reflectors and twin lamp fluorescent luminaires mounted at the top and shielded by louvre panels. These are supplemented by vertical and horizontal fluorescent lamps concealed by screens at the front of the windows. Switch sockets and plugs are installed in the base of all enclosures for any special lighting which may be required.

The first floor includes a main sales area, library, Christmas sales area, a dispensary, offices, stockrooms, and some staff accommodation. As on the ground floor, the main sales area on the first floor has a suspended fibrous plaster ceiling though finished in pale green. An illumination of 20 lm./ft.^{2} is provided by 15 special pendant luminaries each in the form of a sheet steel cream enamelled truncated cone 18-in. in diameter at the base and 16-in. diameter at the top edge, which is surrounded by a gilt enamel-finished scalloped valance. Inside each cone is a polished aluminium reflector pierced in six places to coincide with six pierced stars in the outer cone. Each is fitted with a 300-watt lamp shielded from direct view from beneath by a metal louvre.

Lighting inside the wall and floor display cases is similar to that on the ground floor. Wall cases displaying pictures and picture-frames are illuminated by projecting angle-type fluorescent luminaires.

There is also a suspended fibrous plaster ceiling in the library; one part of this is finished in a dark red and the remainder in a pale green. General lighting is from three types of source; the first is a chandelier pendant having nine "brandy-glass" type shades with 60-watt lamps mounted on a 3-ft. diameter ring; the second is a similar

Fig. 2. The ground floor sales area

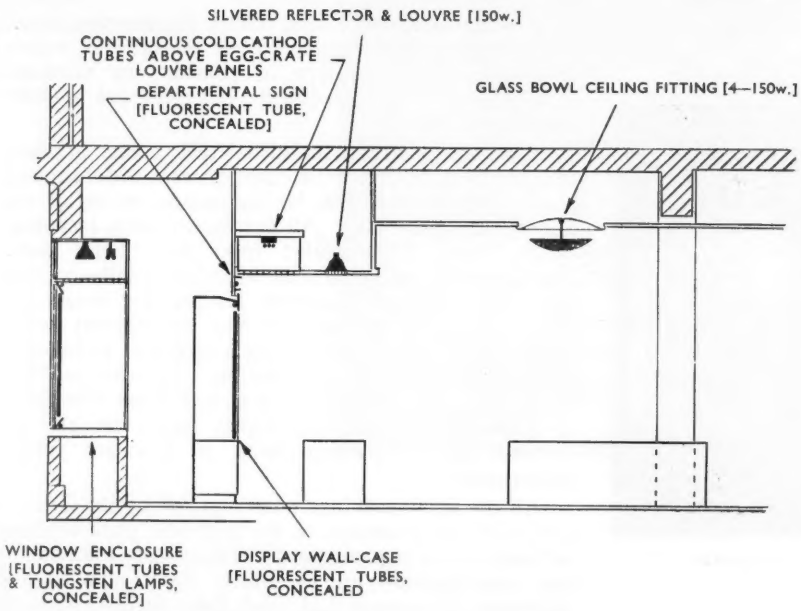

SILVERED REFLECTOR & LOUVRE [150w.]
CONTINUOUS COLD CATHODE TUBES ABOVE EGG-CRATE LOUVRE PANELS
DEPARTMENTAL SIGN [FLUORESCENT TUBE, CONCEALED]
GLASS BOWL CEILING FITTING [4—150w.]
WINDOW ENCLOSURE [FLUORESCENT TUBES & TUNGSTEN LAMPS, CONCEALED]
DISPLAY WALL-CASE [FLUORESCENT TUBES, CONCEALED

Fig. 3. East-West section through part of ground floor

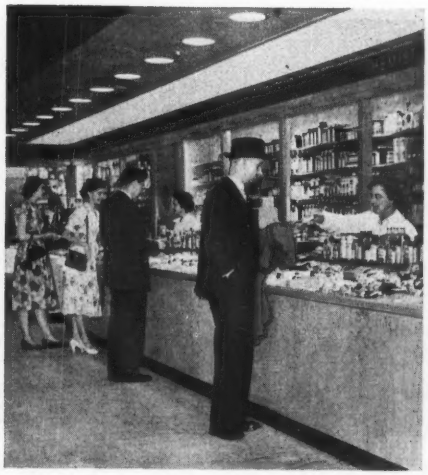


Fig. 4. Counter lighting

Fig. 5. First floor sales area

Fig. 6. Lighting of the window enclosures

Fig. 7. Lighting of the library shelves

arrangement with six such shades mounted around a structural column, and the third is from six silvered reflectors, each with a 150-watt lamp and white enamelled metal louvres, recessed flush with the suspended ceiling at 8-ft. centres in front of the wall cases. Lighting of books in the wall cases is by horizontal fluorescent lamps concealed at the front of the soffits.

Lighting in the basement, offices, dispensaries, store-rooms, staff accommodation, etc., is generally by means of spherical or open type of pendants or brackets. Bulked units are also used in the basement and in other confined spaces.

The cabling system included V.I.R. cables in sheet steel trunking and screwed conduit systems, with heat and fire-resisting flexible cords for the internal wiring of the lighting installation, etc. All installation work, including switch-fittings, is concealed from the public view. Throughout the execution of the electrical installation care was taken to ensure adequate facilities for access for future inspection, maintenance and development work. Ceiling roses, each incorporating a three-pin socket and plug and fitted with suitable flexible cord, were used for the cabling system terminations to fluorescent luminaires in window enclosures and display cases and also to recessed general lighting units to facilitate future maintenance.

All the lighting fittings were supplied by the G.E.C., Ltd., with the exception of the prismatic glass window reflectors which were supplied by Holophane Ltd., and a few miscellaneous fittings which were supplied by Merchant Adventurers Ltd., and Falk, Stadelmann and Co., Ltd.

The building was planned by the chief architect of Boots, Mr. C. St. Clair Oakes, M.B.E., F.R.I.B.A., and Mr. Frank Walker, F.I.E.S. Chief Electrical Engineer (Architects' Dept.) was responsible for the electrical layout. The installation work was carried out by Devon Electrical Supplies Co., Ltd.

Freeman, Hardy and Willis Shop at Catford

Architect :
Patrick Gwynne

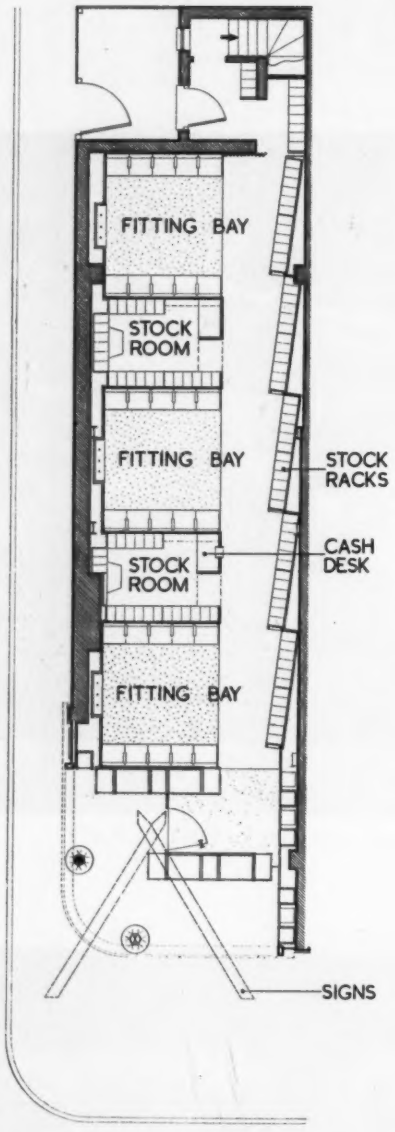
The entrance

The exterior lighting of the shop is by means of hidden-source lights in the various showcases and illuminated " banner " signs. Not shown in the accompanying photograph is a strongly lit, black and white roof sign on the flat roof over the lobby. This sign acts as a beacon and, together with the coloured banner signs, replaces the usual fascia sign, the fascia itself being finished with white tiles and left plain to act as an eye-catcher by day.

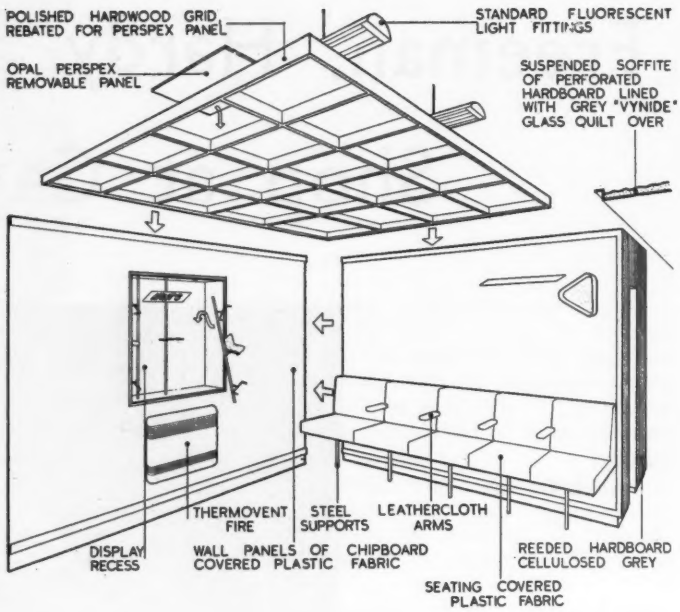
The banner signs, which are suspended as normal hanging signs from above, consist of a sheet metal triangular-section casing, with top access panel, and cut-out lettering in each side. Three white cold cathode tubes are placed centrally and illuminate through special diffusing and coloured glass, red for one sign, blue for the other. These particular signs were developed to cope with the unusually long name of the firm and to place the name where it can be seen from any direction; they are tilted down towards the shopper.

The shop windows are divided into many compartments; one of the main reasons for this treatment is to enable strong colours to be introduced into the windows as a permanent display, to offset the rather uniform appearance of a large display of shoes. Each of the compartments is lit by strip-lights placed directly behind the dividing strips so that lighting is kept to the front and out of sight. The overall night-time effect resulting from this treatment is one of a pattern of colour, which at the same time throws a good light on the footwear and provides the necessary highlights.

The interior lighting of the shop has been kept simple and straightforward with a view to assisting the apparent size of the rather narrow premises. The interior layout divides the space into three compartments, for men,



Plan of shop


POLISHED HARDWOOD GRID REBATED FOR PERSPEX PANEL
STANDARD FLUORESCENT LIGHT FITTINGS
OPAL PERSPEX REMOVABLE PANEL
SUSPENDED SOFFITE OF PERFORATED HARDBOARD LINED WITH GREY "VYNIDE" GLASS QUILT OVER
THERMOVENT FIRE
STEEL SUPPORTS
LEATHERCLOTH ARMS
DISPLAY RECESS
WALL PANELS OF CHIPBOARD COVERED PLASTIC FABRIC
REEDED HARDBOARD CELLULOSED GREY
SEATING COVERED PLASTIC FABRIC

Detail of a fitting compartment

One of the fitting compartments

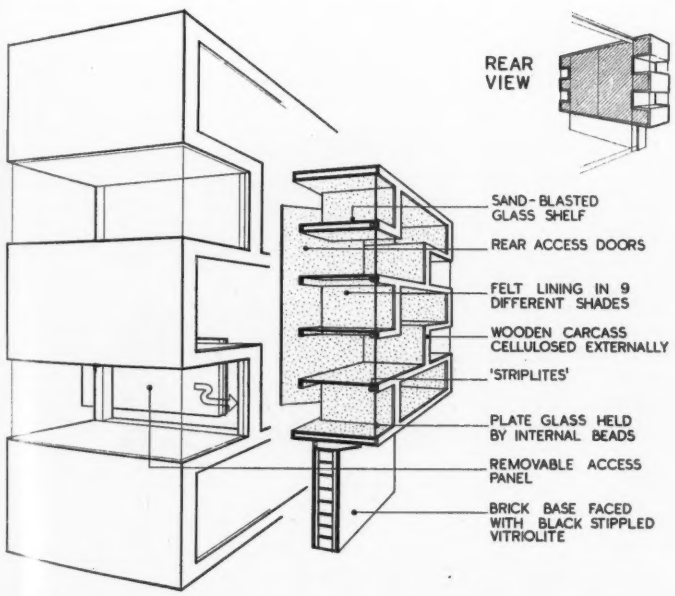
The passageway leading to compartments and stockrooms

women and children, and each decorated in a different colour theme. Each of these bays is "roofed" with a wooden grid into which are loosely fitted opal plastic panels which provide a complete diffusion of the light from the two fluorescent twin fittings which are suspended from the actual ceilings above. Access to these fittings is easily obtained by removing the plastic panels which are thus also easily removed for cleaning.

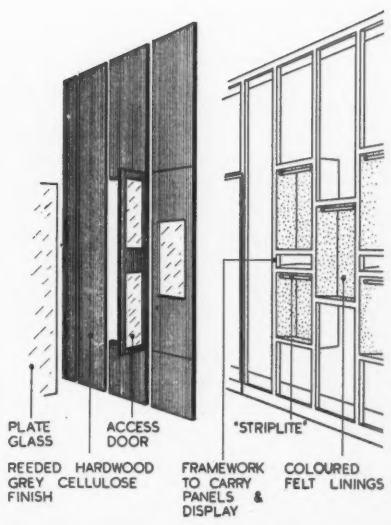
The only other interior lighting effect is a series of circular porthole lights along the length of the passageway which throw a pool of light on to the light coloured floor and at the same time illuminate the shoe boxes on the racks. These portholes are equipped with 75-watt silvered spotlights which have been found to provide adequate light without undue heating. The lamps are screened by small pieces of plastic louvre which are removable for access.

Small illuminated signs inside the shop are designed on the same basis as the outside banner signs, but using strip lights for internal illumination.

Shopfitting : A. Davies and Co., Ltd.
Signs : L. Bloom.



Detail of display case



Detail of wall display

Jay's, Regent Street

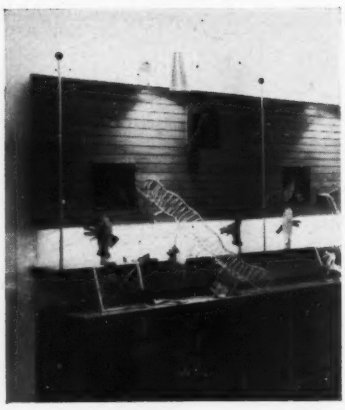
Architects :
Bronek Katz
and R. Vaughan

Ground floor showing false walls and spotlights in beams. Glove display, seen in background, is also shown in close-up below

The reconstruction recently carried out by Jay's, of Regent Street, involved relighting in many parts of the shop. The lighting installation is intended to provide a high standard of general lighting (by the judicious mixture of fluorescent and tungsten lamps) to all the departments remodelled, together with special lighting (either concealed fluorescent lamps or spotlamps in decorative reflectors) to accentuate the display features and sales counters. The form this takes varies considerably, due to the conditions imposed by the character of the existing structure. Throughout, the colours are white or pastel for all wall surfaces, with strong colours used in small areas to display panels; the ceilings are white at higher level to allow maximum reflection, and dark grey or beige on lower false ceilings where the recesses conceal adjustable spotlamps edged in dark green.

In particular the main sales area on the ground floor required special treatment on account of its size and the extreme ceiling height of 16 ft. The clients wished the existing decorative plaster ceiling to be emphasised by concealed lighting. This effect was achieved by setting 5-ft. fluorescent lamps (39) in special reflectors behind false walls at cornice level. The necessary 150-watt spotlamps (24) required for high lighting the sales counters were concealed in the existing plaster false beams and inserted in special fibrous plaster insets. The lighting consultant for the foregoing scheme was Mr. Anthony Juer.

In addition the various departments incorporated in the main sales area each receive special lighting treat-



Millinery Department

ment for their display features. In the case of the hosiery display, a 10 ft. by 4 ft. wall-papered recess above stocking storage fitment, eight 75-watt strip-lights were set above a reeded glass panel to give continuous even light and to avoid the colour problem which might have been caused by fluorescent lamps. In contrast, a 27 ft. long glove display feature has mixed lighting; there are recessed coloured panels set in a hardwood slatted screen, each fitted with a concealed tungsten lamp, and 4-ft. fluorescent lamps (six at the top and six at the bottom) are set behind the screen to give indirect light to the wall above and to the glove sales counter below. In addition there are six 75-watt spotlamps in decorative brass reflectors. (This glove counter is an experiment in combining storage with front access sales; a sample of each glove is displayed in the glass front to each drawer, and there are pull-out panels to enable assistants to try gloves on customers.) The sales counters in all departments have lighting in the display cases by four 30-watt strip-lights to each counter set behind special reflectors and screened by polished brass angles which support the counter glazing.

In both the millinery and shoe departments the architects were able to provide false ceilings and thus incorporate indirect lighting. Fluorescent lamps are set in stove-enamelled sheet metal lighting beams at 8 ft. 6 in. height, giving indirect light reflected from the white ceiling, which is 10 ft. high; high lighting to customers' feet in the shoe showroom is achieved by the concealed adjustable 150-watt spotlights set in the false ceiling at 8 ft. 6 in. level. In both departments mirrors have been used to cover whole walls in order to extend the size and form of the restricted showrooms. The shoe and hat displays are lighted by 75-watt spotlamps set in brass decorative reflectors.

The installation was carried out by Harris and Sheldon (Electrical), Ltd.

Shoe Department

Mersey Room, Lewis's, Liverpool

The Mersey Room Restaurant at Lewis's store in Liverpool was designed by Misha Black, Robert Gutmann and Gunther Hoffstead of the Design Research Unit.

The lighting of the restaurant is by a mixture of tungsten and fluorescent lamps. The lighting of the ceiling is by means of three rows of cold cathode tubes concealed in a trough: two rows are of gold tubes, the other of ivory. The tubes were supplied by the G.E.C., Ltd. The ceiling itself has a matt finish with the exception of the small circles, which can be seen in Fig. 2. These circles are small indents and are given an enamelled finish which introduces a pleasant and interesting effect to the ceiling.

Tungsten lamps are used in spotlights over the tables and on the balustrade. All the tungsten luminaires were supplied by Courtney Pope (Electrical), Ltd.

Around the walls of the restaurant is a series of 16 panels depicting the history of Liverpool from 1207 to 1854. The panels are of Lebanon Cedar on which the pictures are carved. These panels are lighted from above by fluorescent lamps.

Above: *The vestibule*

Left: *Part of the restaurant*

Below: *View of one of the panels*

Garland's Store, Norwich

Garland's Store in London Street, Norwich, was one of the many buildings which suffered as a result of war-time raids on that city. Steady rebuilding and relighting has taken place as licences permitted. Fluorescent luminaires using tungsten lamp ballasts have been extensively used.

On the ground floor luminaires with louvre frames have been used and, by mounting them at a uniform height, the variations of ceiling height have to some extent been concealed.

A further point of interest on the ground floor is the small section for which the flexible ceiling grid has been used with pleasing results. Designed for possible use with a wide range of light sources, this installation employs the 40-watt fluorescent lamp with the tungsten ballast in twin lamp luminaires.

The simplicity of the fluorescent/tungsten circuit has also been used to advantage where special effects are required as in the Hat Bar on the first floor, where 4-ft. tubes are mounted behind a continuous baffle to provide light on the counter and to give upward light while the tungsten ballast lamps are mounted above each mirror.

Fluorescent lamps and their ballast lamps have been used in a similar way to provide an interesting effect with the island display and with the window lighting. A number of different types of luminaires in the Philips Electrical Ltd. range employing tungsten lamp ballasts have been used in this shop.

Above: *The fabric department*

Below: *The haberdashery department*

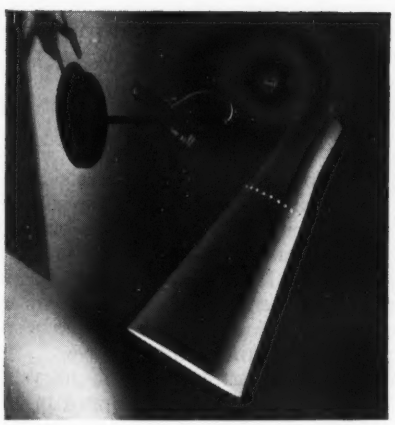
Kavanagh's Kingston-on-Thames

A new shoe shop opened recently by John Kavanagh, Ltd., at Kingston-on-Thames, has introduced a modern and colourful note into the historic Market Place. Originally a hardware and tool store, the premises, of considerable depth on a very narrow frontage, required almost complete reconstruction before the new shopfront and interior could be installed. The recessed entrance and window display area at one end and the stock-room at the other have reduced the sales area to comfortable proportions to which the decor and lighting have added an attractive and almost intimate atmosphere.

The ground floor interior, devoted mainly to ladies' footwear, is illuminated by 4-ft. 40-watt "Daylight" fluorescent tubes on a canopy, giving indirect illumination from the ceiling above and diffuse direct lighting through opal glass on to the seats immediately below. Colourful "Forrest Modern" fittings on the canopy edge and over display panels are used as spotlights.

In the basement is the men's and children's department where the lighting treatment is similar except that reeded "Perspex" diffusers are used in the canopy. The stair-

Ladies' Department, Ground Floor.



Close-up of fitting as shown in photograph above.

case to the basement is illuminated by 3-ft., 30-watt fluorescent tubes concealed within cross beams, an arrangement which tends to reduce the apparent height of the stair well.

The shopfront comprises two window areas within a lobby separated from the sales area by the plate-glass door. Exclusively designed fittings on the dark lobby ceiling produce attractive light patterns. Each of the two window cases are illuminated from ceiling-mounted "Daylight" fluorescent tubes screened from direct view by detachable anodised aluminium baffles—an alternative to the usual "egg-crate" louvre panel—with spotlights providing accent lighting on selected areas of display.

Architect :—Frederick Atkins, Dip. Arch., A.R.I.B.A.

Lighting design :—Thorn Electrical Industries, Ltd., in collaboration with the architect.

Installation :—South Eastern Electricity Board.

Hammonds of Hull

Hammond's Ltd. new store, which dominates Paragon Square at Hull, is a four-storey island construction of reinforced concrete faced with Portland stone and represents an intelligent interpretation of contemporary trend. Cantilevered construction has enabled the architect to relieve the wide expanse of white stone by continuous fenestration, and also to avoid the use of internal beams which so often make the design of interior lighting difficult. The total area of the five floors is approximately 166,000 square feet. The lighting problem was varied and interesting.

In the basement, which is of the "bazaar" type of layout, the lighting is purely general and is supplied by approximately 258 louvred units utilising luminate glass sides and metal louvred underside, each unit housing one 80-watt fluorescent lamp, giving a service figure of approximately 25 lumens per square foot. The units are installed in a staggered symmetrical pattern, giving the area an attractive and bright appearance so necessary for the basement of any store.

Adequate plugs are installed for display lighting at the top and bottom of every column as well as round the perimeter walls.

The ground floor is bordered on three sides by display windows. The window lighting, simple but effective, is by means of a continuous run of two-lamp dispersive reflectors with 80-watt fluorescent lamps interspaced with swivel spots using 150-watt internally silvered lamps. This lighting is augmented in the windows nearest to the main entrance, where louvrall ceilings have been installed with normal 80-watt batten fittings above.

Special provision has been made to ventilate the void above the windows, air being drawn in at window-bed level and taken through specially constructed ventilating ducts and exhausted by means of extract fans to the outside of the building. This ventilation ensures that the fittings themselves operate in the correct ambient temperature and that the windows are kept free of condensation.

The entrance lighting has been planned to give a high intensity and to be attractive and inviting. Although slightly different techniques have been used for the

One of the entrances, from the interior

various entrances, fluorescent lamps have been installed in recessed units supplemented by various types of downlights in each case.

The whole of the entrances and windows are planned in conjunction with a cantilevered concrete canopy which shields the windows from direct sunlight. Recessed 15-inch porthole fittings, made in anodised aluminium to withstand the coastal atmosphere and with dropped "Perspex" moulding, are fitted into the canopy.

Within the store, the general lighting is by means of multi-light louvred fittings with luminate glass sides, each fitting being suspended 2 ft. 6 in. from the ceiling, with eight 5 ft. 80-watt lamps per unit. A high proportion of upward lighting has been allowed; the service intensity with the general lighting alone is approximately 20/25 lm./ft.^{2}. The general lighting is augmented by the display lighting installed in perimeter pelmets, pelmets round various islands, and the lighting installed in the counters themselves; provision has been made for socket outlets at both the top and bottom of the columns.

On the first floor one finds what is claimed to be one of the finest and most elegant fashion salons in the north of England, its sweeping lines being assisted by a décor of muted pastel shades. A series of suspended plaster ceilings carry the main lighting for the fashion salon, and the structural ceiling above this is painted midnight blue. Into the plaster ceilings are recessed purpose-made fluorescent units incorporating egg-crate louvres, some being curved to suit the various designs. The fluorescent lighting is supplemented by swivel and fixed spots, many of which were designed for the particular display which they are illuminating.

The central lighting feature consists of a nine-branch suspended fitting incorporating some specially imported striped amber glassware suspended from a circular ring on the structural ceiling, which encloses a complete circle of mirror divided into segments which makes an attractive feature on the dark-blue ceiling.

The luminaires for the general lighting, windows and displays described above were manufactured by Courtney, Pope (Electrical), Ltd.

Section of the hat department

The first floor fashion salon

The *Lighting* specialists

Messrs. Hammonds Limited of Hull

Architects : T. P. Bennett & Son

COURTNEY, POPE (ELECTRICAL) LTD.

AMHURST PARK WORKS, TOTTENHAM, LONDON, N.15 • STAMFORD HILL 4266 (10 LINES)

I.E.S. Activities

Transvaal Group

The second meeting of the new Transvaal Group took place at the Johannesburg Public Library on Monday, April 26, when the lecturer was Mr. Downey.

In introducing Mr. Downey, the chairman pointed out that it was most appropriate that Mr. Downey should be the speaker at this second meeting since not only had he always taken a great interest in street lighting as Municipal Engineer of Springs Municipality, but because he was also the President of the South African National Committee of Illumination. The chairman also stated that Mr. Downey's subject, namely, "An Introduction to Street Lighting," was very opportune in view of the fact that another winter was starting in South Africa and particularly in view of the very revealing figures recently published by the Electric Development Association in Great Britain regarding the alarming increase in traffic mortalities and injuries during the hours of darkness.

In his paper Mr. Downey gave a short history of street lighting from earliest times followed up by the reasons for, and examples of, good street lighting, emphasising that he wished to introduce the subject in a general way so that at a later stage further papers could follow which would cover in more detail other particular aspects of street lighting.

Introduced by Mr. Chuck, a lively discussion followed Mr. Downey's paper, and the evening was concluded by a vote of thanks proposed by Mr. Theron, Electrical Engineer to the Vanderbijl Park Management Co., and seconded by Mr. du Toit, of the South African Bureau of Standards.

Manchester Centre

At the Manchester Centre meeting on April 7, Mr. J. S. Smyth gave a paper on "The Lighting of Industrial Open Spaces." Mr. Smyth emphasised the increasing interest in outdoor lighting brought about by the heavy capital equipment involved in modern engineering practice, which encouraged night working to spread overhead costs.

He divided such lighting installations into two classes; floodlighting with relatively few groups of high powered sources, and general lighting using a larger number of lighting points carried on columns within the area to be lighted.

After discussing the relative merits of the two systems, Mr. Smyth dealt with the techniques involved. He described the nature of the illumination distribution given by typical industrial floodlights, and using the concept of beam lumens gave details of simplified methods of calculating the power needed for various tasks. In assessing the illumination required, war-time practice was of value, since only during the war had there been extensive experience of working under comparatively low levels of lighting.

A number of typical installations were described with lantern slides; these included specialised factory installations but the greater part were connected with the transport industry.

The discussion was opened by Mr. Ainscow, who gave the contracting engineer's view. He felt that there was a tendency to underlight some installations, such as petrol catalytic cracking plants, and asked for generous lighting in such positions, particularly at key points. Mr. Ainscow also emphasised the problems of good maintenance, especially where adequate access to the equipment was not provided.

A long discussion followed, in which both members and visitors took full part.

Nottingham Centre

At a meeting held on April 1, 1954, Mr. A. D. Charters presented a paper entitled "Lighting at Home and Abroad" which was profusely illustrated by lantern slides and gave a very full comparison of lighting features in Great Britain and on the Continent. Mr. Charters stated that he did not think that the lighting techniques of engineers in this country were in any way inferior to those found in Europe.

Following the annual general meeting on May 14, two papers were read by students of the University of Nottingham. The first was given by Mr. J. Dowell and entitled "Photograph Photometry," and the second, by Mr. J. Watson, was entitled "Stereoscopic Vision."

Personal

MR. J. E. SUTTON, of the British Thomson-Houston Co., Ltd., has been appointed Senior Lamp and Lighting Salesman at their Newcastle-upon-Tyne office. Apart from war service he has been with the company at Manchester since 1937. His appointment follows the death of MR. J. K. MCCRAITH in January this year.

MR. K. S. ESTLIN, O.B.E., M.C., T.D., ASSOC.I.E.E., has been appointed manager of the Ediswan London District Office.

Ashley Accessories, Ltd., have appointed three Sales Representatives. MR. NORMAN JACKSON will be responsible for North and West Lancashire, with North Wales, residing in Liverpool; MR. HARRY CHADWICK will cover East Lancashire and Yorkshire, from Manchester; and MR. KENNETH L. IRVING will represent Ashley Accessories, Ltd., on the North-East Coast, residing in Whitley Bay.

SITUATIONS VACANT

Fully trained LIGHTING ENGINEER required for London office. Applicant must be well educated and conversant with modern lighting methods. Apply Senior Lighting Engineer, Ekco-Ensign Electric, Ltd., 45, Essex Street, Strand, W.C.2.

STREET LIGHTING EQUIPMENT DESIGN AND DEVELOPMENT ENGINEER wanted by progressive Canadian-owned street lighting manufacturer to take charge of development and modification programme. Excellent opportunity in rapidly expanding operation. Apply, giving educational background, experience and salary expected. All replies confidential. M. B. Hastings, President Powerlite Devices, Limited, 1870, Davenport Road, Toronto, 9, Canada.

DESIGNER-DRAUGHTSMAN, previously engaged in developing all types of lighting equipment, required by ELMA/ELFA Company in London district. Pension scheme in operation. Write, giving full details of training and experience. Box No. 812, Dorland Advertising, Ltd., 18/20, Regent Street, London, S.W.1.

Lighting on the Royal Tour

The recent Royal Tour may truly be said to have encircled the world in light. Wherever the Royal party stopped the festivities continued into the night; though the means of illumination may have varied in the places visited by Her Majesty light was once again used to express the joy of her peoples. On the following pages are given some examples of the floodlighting and decorative lighting which were a feature of the tour.

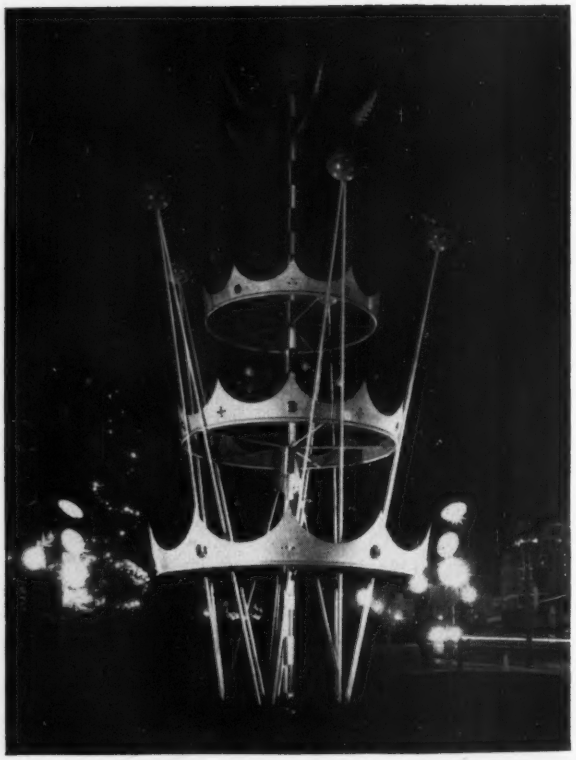


Fig. 1. *Floodlit carousel feature in front of Parliament Buildings, Wellington.*

New Zealand

The pictures reproduced on this and the following page illustrate the type of lighting carried out in Auckland and Wellington, where many public and commercial buildings were floodlit for the occasion. Special decoration features were also erected, and examples of these we show in figures 1, 3, 4 and 5. The features shown in fig. 4 will be recognised by many who saw the Coronation decorations in London as that which appeared on the front of the G.E.C. building in Kingsway and which was sent to Wellington for the Royal Visit.

Both of these cities must have been very colourful by night, as effective use was made of normal and coloured tungsten lamps, neon, mercury and sodium floodlights.

Fig. 2. Parliament Buildings, Wellington.

Fig. 3. Archway in Auckland.

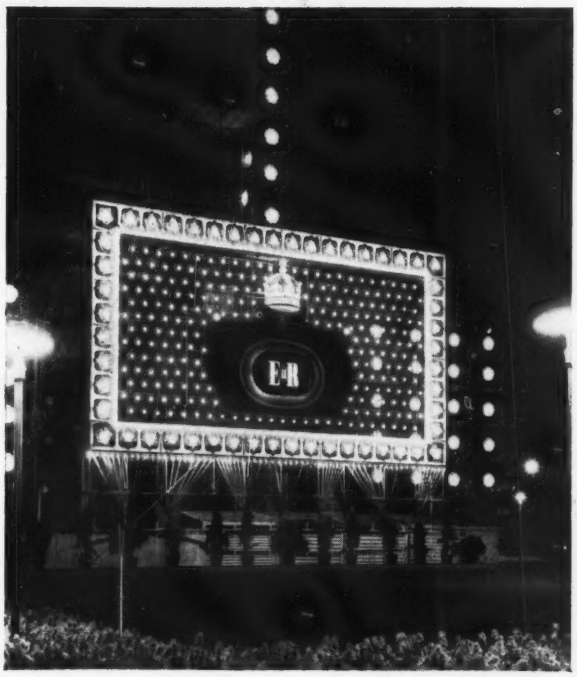
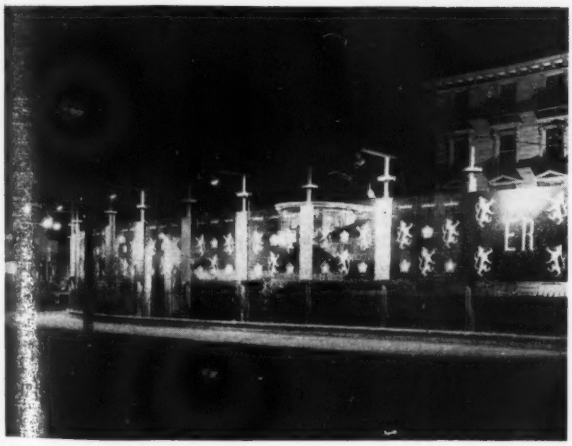


Fig. 4. Feature on one of the buildings of the Wellington City Corporation.

Fig. 5. Wire-screen feature outside Government Buildings, Wellington.

Fig. 6. General Assembly Library, Wellington.



Australia

Fig. 7. The Centre of Melbourne seen from across the Yarra.

Royal Melbourne

(Contributed by J. C. Lowson)

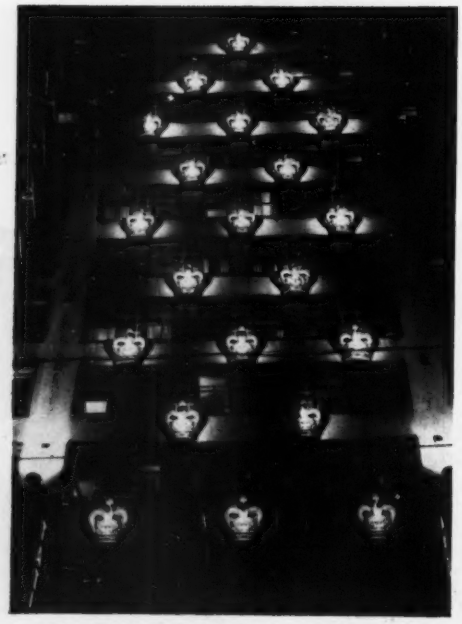


Fig. 8. Façade of the Hotel Australia.

There is not the slightest doubt that the recent Royal Tour of Australia has been an outstanding success. The whole nation has had a wonderful opportunity to give personal expression to its genuine, and deeply rooted, loyalty and affection for the mother country—and everyone has made the most of it.

Lighting naturally played an important part in the celebrations and the Melbourne illuminations provide a typical example of the enthusiasm and ingenuity with which the job was tackled.

As might be expected, the main effort was concentrated in the central city area, and the streets containing the biggest retail stores and commercial houses were a solid blaze of light. But it was evident that we have come a long way since the days when decorative floodlighting merely meant planting a battery of projectors somewhere on the other side of the street, for a notable feature of most of the Melbourne displays was the care with which the actual sources of light had been built into the building decorations, or otherwise concealed.

The outstanding example of straight classical floodlighting with "white" incandescent projectors was the Russell Street Police Headquarters. This cream brick building with its massive tower rising 140 feet above street level (topped with a radio mast of almost equal height) could be seen from many parts of the city, and a very even brightness was achieved with the aid of unobtrusive projectors mounted on the building itself.

Coloured floodlighting was used to good effect in the case of the Victoria Barracks which faces tree-lined St. Kilda Road. This building is covered with green

creeper which showed up well in mercury vapour light, provided by projectors mounted on poles. These floods were concealed from view by scarlet banners lit by incandescent units mounted above them. Seen through the foliage of the trees, the combination of scarlet and green was remarkably attractive, and once again the light sources themselves were simply but effectively camouflaged.

Crowns were naturally a popular decorative motif and there were hundreds of them of all sorts and sizes. Their use on the façade of the Hotel Australia showed how an exceptionally good lighting effect can be achieved extremely simply. Each crown was separately illuminated by a single deeply shaded incandescent lamp mounted out in front of it, the lighting units themselves being virtually invisible.

Jewelled crowns were, of course, very popular, and in some of them the "jewels" were made to flash off and on. Generally speaking the result was not very good, but in one case the trick was done most effectively; the enormous crown which topped the dome of Flinders Street railway station had a number of coloured "jewels" in its base, each one of which consisted of three rows of ten pigmy lamps, and a continuous "ripple" running round these 30 lamps produced an effective "sparkle."

A portion of a crown surmounting an elaborate set piece on the front of one of Melbourne's large chain stores deserves special mention since a local newspaper columnist suggested that this might be a nostalgic throwback to happier days when "Everything Under Half-a-Crown" was this particular firm's slogan. Be that as it may, this particular set piece was one of the most elaborate in Melbourne. A vast three-dimensional Australian landscape complete with kangaroo and emu (both animated); a kookaburra (wired for sound); a swagman by his camp fire; and a large assortment of stuffed rabbits made this display a notable one. (It was originally intended that, as a finishing touch, a curl of smoke should rise from the camp fire, but the fire brigade forbade this.)

However, this did not prevent the brigade from letting off smoke bombs every eight minutes inside the top of their observation tower on the Eastern Hill Fire Station which overlooks the city. As the tower was internally and externally illuminated with flickering red light, the effect was striking in the extreme and is said to have drawn several hundred agitated phone calls from the public on the first night.

One item of particular interest to the lighting engineer was the Chamber of Manufacturers' Arch, which ingeniously combined bare incandescent lamps, fluorescent lamps, and incandescent floodlights. As the photograph shows, the 8-ft. cold cathode lamps were placed on the underside of the arch, whilst its sides were studded with white-sprayed 15-watt tungsten lamps. Against the gilded background these white globes gave a very attractive appearance by night as well as by day. The coat of arms was mounted out in front of the bulbs and was floodlighted by projectors on nearby tram poles. The light spilling on to the sides of the arch was completely masked by the bright bulbs, and a clear-cut and very satisfying effect resulted.

Indeed, this and many other displays made it obvious that so long as there is decorative lighting to be done the incandescent lamp will never be obsolete. Moreover,

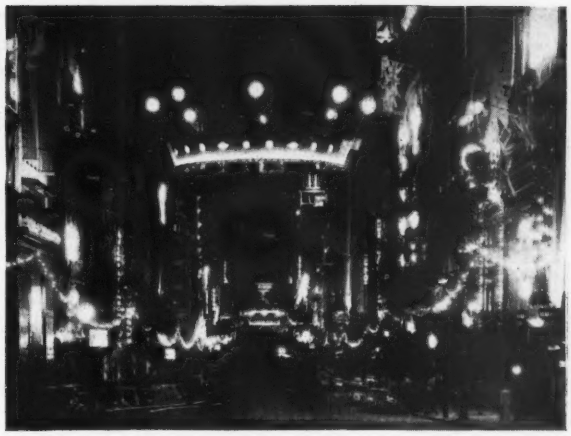


Fig. 9. Collins-street showing the crowns suspended over intersections.

Fig. 10. A large store in Bourke Street.

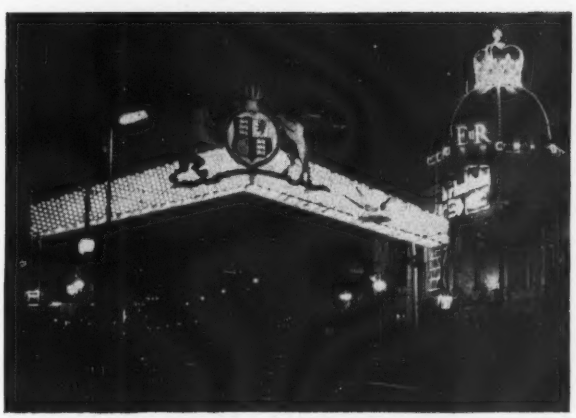


Fig. 11. The Chamber of Manufacturers' Arch in Swanton Street with Flinders Street Station in the background.

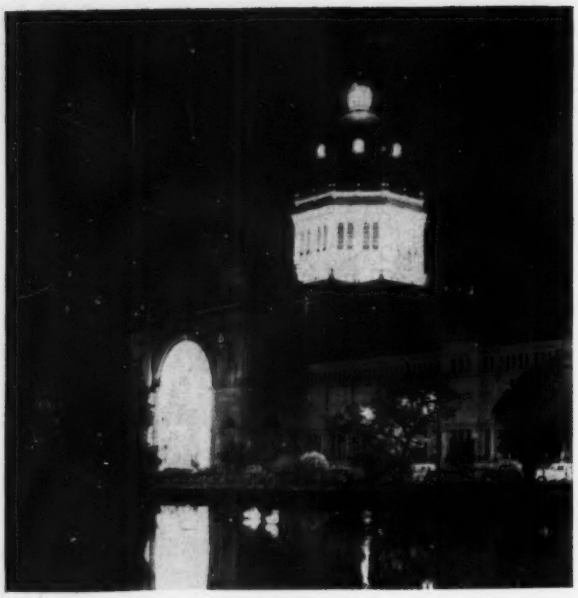


Fig. 12. *Exhibition Buildings.*

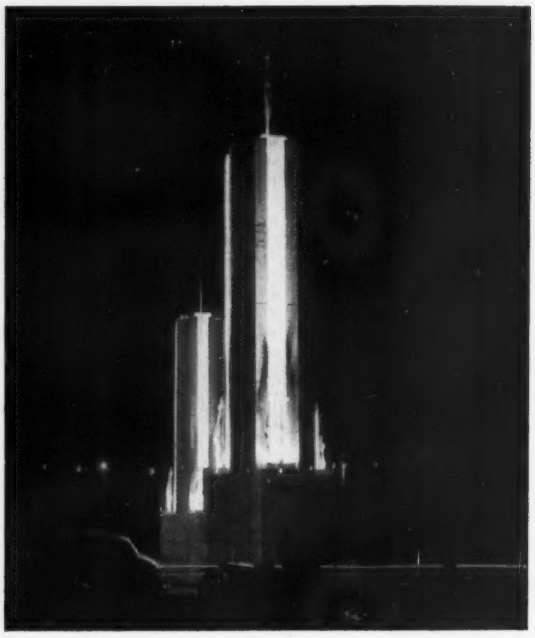


Fig. 14. *Pair of pylons on St. Kilda Road.*

Fig. 13. *The Shrine of Remembrance and the MacRobertson fountain.*

when it comes to trees, the good old-fashioned method of festooning them with fairy lights, Christmas tree fashion, still takes a lot of beating. The latter method was extensively used, since Melbourne is fortunate both in its tree-lined city streets and in the extensive parks and gardens which flank the central city area on two sides. A great deal of trouble was taken to make these look attractive. In addition to festooning the trees and illuminating the fountains, the lakes were ornamented with life-size luminous ducks and swans made of moulded wire netting sprayed with a translucent plastic and internally lit with incandescent lamps. Mounted on inconspicuous anchored floats, these luminous birds moved gently amongst the water lilies—quite a striking effect.

From the gardens, too, there was an impressive panorama of the illuminated city skyline just across the Yarra. But perhaps the most significant feature in this parkland area was the floodlit Royal Standard fluttering on top of the white tower of Government House; for this supplied both finishing touch and symbolic reason for the whole affair.

Sydney

Here again it is possible to show only a few of the many floodlighting installations. The Port Authority building is one of the newest buildings in Sydney, and the treatment, though effective, was straightforward with the exception of the decorative motif in the centre tower. The palm oasis in Hyde Park was lit with hot-cathode fluorescent lamps with colour-changing and dimming control. The dome of the Queen Victoria Building (fig. 17) is of copper, which responded very well to floodlighting under mercury vapour lamps. The Philip's Electrical Industries building (fig. 18) is not in itself a very impressive building, and it is understood that the decorative lighting was so designed that the building itself was inconspicuous, serving only as a support for the lighting feature.

Fig. 17. *The dome of Queen Victoria Building.*

Fig. 15. *Port Authority Building.*

Fig. 16. *The Palm Oasis, Hyde Park.*

Fig. 18. *Philip's Electrical Industries Building in Clarence Street.*

The Royal Yacht

On May 15 the Royal Yacht *Britannia* reached London with H.M. the Queen and H.R.H. the Duke of Edinburgh on the last stage of their Commonwealth tour.

Contributions to the lighting on the Royal Yacht were made by a number of firms in the lighting industry, and some of the fittings were made to special designs produced in collaboration with the architects responsible for the interior decoration.

Fig. 21 shows the dining-room, where circular ceiling fittings were used which gave a sparkling "coronet" effect by the use of cut-glass prisms encircling the lamp. Similar fittings are also used on the upper deck entrance. Additional lighting in the dining-room is provided by wall brackets and by a cornice containing hot cathode fluorescent lamps along each side of the room.

Another example of cornice lighting is in the ante room (fig. 22). The lamps used are the new De Luxe Warm White, 4-ft. 40-watt fluorescent lamps.

Fig. 19. *At rest in the Pool of London.*

Fig. 20. *The Drawing Room.*

Fig. 21. *The Dining Room.*

Fig. 22. *The Ante Room.*

(Photographs by courtesy of the G.E.C., Ltd.)

Fig. 23. The Mall from Buckingham Palace.

The Return Home

To welcome home the Queen much of the floodlighting seen at the Coronation was again switched on. A new treatment was given to the Mall, where special columns were erected, each carrying a different plaque motif representing the features of the tour and places visited.

A view of one of the columns, of which there were 37, is shown in fig. 26, and close-ups of the plaque motifs are shown in figs. 24 and 25. The plaques were lighted by means of three 150-watt silvered reflector lamps in spinnings; the lions and unicorns at the tops of the masts were each lighted by two 75-watt silvered reflector lamps housed in the collar at the top of the mast, the necks of the lamps being sprayed black so that no individual fittings were required. These lamps, and those in the spinnings, were treated with grease to prevent cracking of the bulb by rain.

In the Victoria Memorial Gardens were a number of flag-draped masts (fig. 27). These were floodlit by focusing type projectors placed on the lawns and equipped with 1,000-watt class B.1 projector lamps. There were also four brackets on each mast containing 150-watt silvered reflector lamps which helped to highlight the flags.

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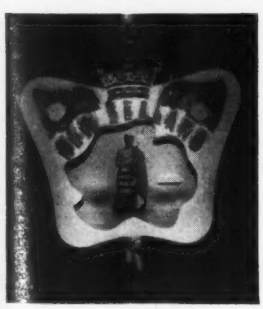

Figs. 24 and 25. Two of the plaque motifs.

Fig. 26. One of the columns in The Mall.

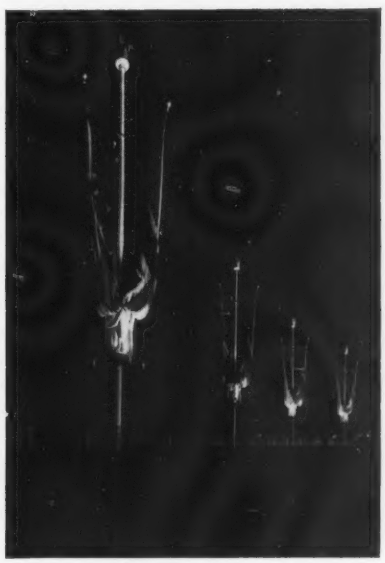

Fig. 27. Flags around the Victoria Memorial.

POSTSCRIPT By "Lumeritas"

The need for good lighting in schools has often been urged on the ground that it will make it unnecessary for children to bend close to their books and "strain" their eyes. This "straining" of the muscles which focus the eyes and cause them to turn inwards, so that the gaze of each is directed to the same point, used to be regarded as favouring the development of short-sightedness among schoolchildren. It has long been known that short-sightedness does, in fact, develop during school life, and it was thought that its incidence might be reduced by the provision of better lighting which would enable schoolchildren to see their work without peering closely at it. Nowadays, however, the concensus of ophthalmological opinion is against the view that putting his nose in the book is likely to make Johnny myopic, although there is a chance that it may disturb his ocular muscle balance and tend to make him squint. But, even if myopia were due to peering by young and immature eyes, it appears, from an investigation by Willard Allphin, that young schoolchildren peer into their work however well it is illuminated. Allphin's study (reported in Illuminating Engineering, **49**, 192, 1954) was made in a grade-school at Salem, Mass., where the posture of many children while writing at their desks was recorded photographically. These photographs were taken in daylight when the illumination on some of the desks was well above 100 lm./ft.^{2}, yet the children are seen to be writing with the eyes only a few inches away from the paper and sometimes with the head much tilted to one side. Allphin rightly concludes that his observations reveal no relation between illumination and posture, and my guess is that his conclusion would be confirmed by more extensive studies relating to young schoolchildren. He points out, also, that children do not generally spend long periods in writing at school: in the school chosen for his investigation the longest spell of writing did not exceed 20 minutes for children up to grade 7, nor did the total writing time per day exceed one hour. What do these conclusions imply? Do they mean that good lighting in schools is unimportant? Of course not! It does not matter if good lighting does not prevent myopia—which is chiefly a matter of heredity and can be "corrected" by glasses anyway. There is no need to rest the case for good school lighting on the avoidance of ocular pathology. What matters is that good lighting not only makes for quick and confident seeing, but is cheering to the spirits —as savants both ancient and modern have pointed out. Allphin, of course, is quite aware of this; he "has no wish to minimise the importance of high illumination levels, good brightness ratios and freedom from glare. These things must certainly give a psychological 'lift' which should result in better schooling, even if we cannot establish exact physiological correlations at the present state of knowledge."

A Member of Parliament and former Home Secretary is reported as saying recently that his only complaint about the House was its lighting. "I find it very trying to my eyes," he said, and, recalling that some journalists had described him as sitting in a somnolent condition, he added: "I assure you it is not sleep but tiredness of the eyes from the lighting which has reduced me to that condition." Now the lighting of the House is quite new —"contemporary," of course, although not contemporary-odd or contemporary-bizarre! Much thought and skill went to its design and yet, for at least one M.P., it is very trying to the eyes. No doubt it will always be impossible to please everyone but, unless we can pin down complaints of this kind to some personal idiosyncrasy, or explain them in terms of other environmental conditions, it would seem there is still room for improvement in the lighting.

Last month I made a brief reference to one of the papers presented at the I.E.S. Southport Summer Meeting, and two of the other papers to which I listened prompt me to make some comment. The first of these, by Mr. S. T. Clark, dealt with a hot cathode fluorescent lighting installation in a woollen mill, and concluded with the author's views on better lighting as an aid to increased production. Mr. Clark recognised that a change from poor lighting, which actually retards production, to something better will lead to some increase in production, because it takes the "brake" off. He recognised, also, that during experiments in which illumination is stepped up workers often increase their output; but he felt that this response may be transient, and due to the interest in their welfare implied by the experiments rather than to any direct aid afforded by higher illumination. This is reminiscent of the conclusions drawn many years ago from the oft-quoted experiments at the Hawthorn plant of the Western Electric Coy. in the United States. Mr. Clark referred to one of Weston's investigations (Industrial Health Research Board, Rep. No. 81, 1938) as showing only a small increase in the output of worsted weavers in response to increases of illumination. I have looked up the report quoted and find it contains an interesting appendix on the significance of output changes. This points out that weaving is chiefly a mechanical process, and a relatively small increase in output can only be got by a relatively large increase in the rate at which the weaver performs the visuo-manual tasks he has to do intermittently. So the weaver may be much aided by better lighting even though there is no impressive increase in cloth produced. However, Mr. Clark did well to point out that while better lighting may enable more, or better quality, work to be done, this desirable result is not bound to follow: it will do so only if "Barkis is willing."

In their paper on home lighting, Messrs. A. H. Young and C. J. Misselbrook confessed that "if an attempt is made to apply the principles of good lighting to domestic interiors, so much latitude must be allowed for the vagaries of personal taste that often many of the principles must be abandoned." In the matter of home lighting almost the only generally accepted "principle" can be stated as "a little of what you fancy does you good," and even illuminating engineers have been known to pay scant regard in their own homes to some of the formal principles of good lighting!